

BOOK REVIEWS

dational to the spectacular capabilities of computers and has attempted to explain these ideas in a simple, non-technical way. The author has largely succeeded in his objective and the book is certainly worth exploring by interested readers.

The book embodies a description of nine algorithms in chapters 2 through 10. Though the content of each of these chapters is referred to as an algorithm, it can be classified more as an 'idea' than an 'algorithm'. For example, chapter 2 talks about search-engine indexing, which is actually an idea and not an algorithm. Similarly, pattern recognition which is the subject of chapter 6 is actually a complete subject area than an algorithm. Nevertheless, each of the chapters from chapters 2 to 10 exposes us to a breakthrough technique or concept or technology that is of a path-breaking nature.

Chapter 1 is a routine introduction to the contents of the book. Chapter 2 deals with the idea of search-engine indexing which was popularized by the Alta Vista search engine in the late 1990s. The famous PageRank algorithm of Sergey Brin and Larry Page (co-founders of Google Inc.) is the subject of chapter 3. Chapter 4 deals with the brilliant work on public key cryptography of Rivest, Shamir and Adleman (RSA algorithm). Chapter 5 walks us through the legendary contributions of Hamming and Shannon on error correcting codes. Chapter 6 dwells on pattern recognition, while chapter 7 deals with data compression. Database technology is treated in some detail in chapter 8. Chapter 9 is devoted to digital signatures and has some overlap with chapter 4. Finally, chapter 10 deals with the key notion of computability. Chapter 10 is truly a fitting tribute to Alan M. Turing, the computer science legend, during his centenary year which happens to be 2012.

There have been a few other books of this genre earlier – *Great Ideas in Computer Science, A Gentle Introduction* by Alan W. Biermann (MIT Press); *New Turing Omnibus* by A. K. Dewday and *Algorithmic Adventures* by Juraj Hromkovic. The above three books do need at least a little background in computer science and/or mathematics for a sound appreciation of the contents. In contrast, the present offering by MacCromick requires almost no background in computer science or mathematics. This is the defining and appealing feature of

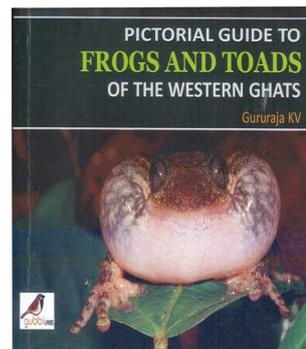
the book. The concepts are presented through apt analogies in real life, interspersed with engaging historical anecdotes. For example, the analogy of mixing paints to explain the RSA cryptography algorithm is quite original. Anecdotes about Richard Hamming, about the secret research on public key cryptography in Great Britain (that was declassified only recently), and about several other researchers are quite fascinating. This feature of the book sustains the interest of the reader throughout.

The choice of some of the topics in the book (such as, for example, the RSA algorithm and the error correcting codes) is beyond any question or controversy, while the choice of certain other topics can be questioned. However, in selecting a certain limited number of topics amidst a wealth of innumerable great ideas is always challenging. The sequence in which the topics have been presented seems to be neither logical nor chronological. Chapter 3 on the PageRank algorithm would have benefitted with a description of many already existing techniques that were put together by Sergey Brin and Larry Page. These are, however, minor issues in this superbly crafted book.

This book has already received accolades from leading computer scientists such as Chuck Thacker (winner of the 2010 Turing Award), Thomas Cormen (co-author of a celebrated book on algorithms) and William Press (co-author of the best selling book *Numerical Recipes*). The book will certainly delight not only readers with little or no computer science background, but computer scientists as well.

Y. NARAHARI

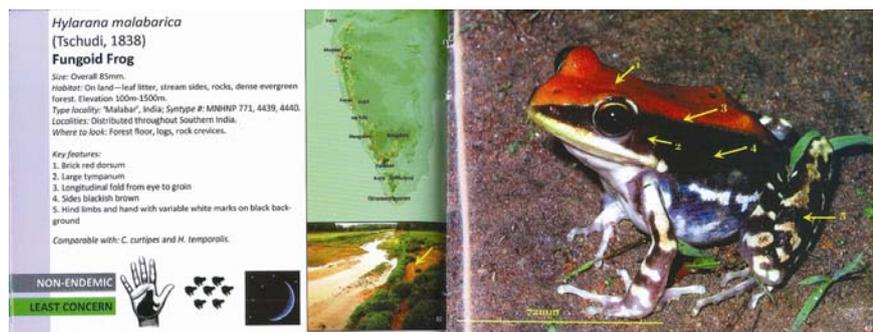
*Department of Computer Science and Automation,
Indian Institute of Science,
Bangalore 560 012, India
e-mail: hari@csa.iisc.ernet.in*



Pictorial Guide to Frogs and Toads of the Western Ghats. K. V. Gururaja. Gubbi Labs LLP, #2-182, II Cross Extension, Gubbi 572 216. India. 2012. xviii + 153 pp. Price: Rs 300/US\$ 20.

In view of recent developments in the form of various new discoveries, taxonomic revisions and studies related to ecology and natural history in the last 15 years, Indian herpetology is greatly metamorphosing. If one looks at the post-independence era, Indian herpetology was overlooked except a few studies by researchers and scientists across the country. Most of the historical information on Indian herpetofauna was in the form of scientific publications or reports – which were 'beyond the reach' (physically and mentally) of various stakeholders like new researchers, Forest Department officials, amateurs and serious naturalists and nature photographers.

The pioneering efforts to bridge this gap was made by J. C. Daniel (Bombay Natural History Society) who published a popular book on Indian reptiles, which was eventually revised and published as *The Book of Indian Amphibians and Reptiles* in 2002. The amphibian section of this book was mainly based on the series of four papers published by him in the *Journal of the Bombay Natural History Society* from 1963 to 1989. In the book he has covered some common and endemic species of Indian amphibians and provided basic (but good) information about their identification, distribution and natural history to some extent along with photographs of live individuals of the respective species. Later R. J. R. Daniels published a book, *Amphibians of Peninsular India* in 2005, which was also considerably noteworthy. This was a step ahead, but as these were textbooks of large size, they had more text and fewer images and with old scientific names. In subsequent years there were many new



publications pertaining to new species descriptions and taxonomic revisions. For effective conservation measures scientific information like this should reach the masses, and to overcome this hurdle there is a great need of a good field guide for Indian amphibians.

India harbours rich diversity of amphibians, which are more concentrated in the Western Ghats and North East India; many of them are endemic and are facing dire consequences. In recent years in India there is a large influx of amphibian enthusiasts and researchers, amateur and serious naturalists and nature photographers, who are visiting various places and documenting them. Often amphibian species which they encounter in the field or photographs which they take are unidentified or misidentified. The amphibians are not considered under various management and conservation programmes formulated by the forest departments. Therefore, such documentation will create awareness among the people and assist in the conservation efforts. This book is a much needed relief. The compact size, content, layout and price of this book are appreciable.

In this field guide the author has attempted to provide most of the general information about frogs and toads, such

as how to differentiate and identify them, why do we need them, what problems they are facing and why do we need to conserve them. The author has made an excellent effort to give a photographic representation of general morphological features such as, skin texture, eye and vocal sac. However, the colour of the frog representing various features and measurements mentioned on figures in pages viii and ix merges with the surrounding in many cases. The font size is also small, so it might make it difficult to read. The compiled list of amphibians and reptiles of the Western Ghats with recent nomenclature is an additional bonus. The content provided along with each species is concise, clear and precise, which is a result of the author's long association with amphibians of the Western Ghats in the field and the laboratory. The information about type locality, location of types, habitat and microhabitat, their overall distribution, five prominent key features, IUCN conservation status, endemic or non-endemic status, size, group size, diurnal or nocturnal habit and distribution map is of importance to everyone. There may be some 'arguments' regarding this content, especially distribution and key features, but the information provided here is for a general

understanding targeting the layman and for further details, one can refer to the respective scientific publications.

The layout of the book is professionally done and deserves appreciation. In this book one can easily browse amphibians of the Western Ghats based on their habitats and mainly divided into four groups – terrestrial/burrowing, semi-aquatic/terrestrial, aquatic and arboreal, which are colour-coded for easy access. Layout for each species is in a double spread of which one page has an image/s and the other has information about the respective species. The images are sharp, representing most of the key characters, with proper colours and taken in their respective habitat. It is noteworthy that the author has made an attempt to collect these images from researchers and naturalists with some basic understanding of frog identification. The scale provided at the left corner of every image gives a general idea about the size of the species. The five key features mentioned in the content are numbered and they are respectively represented by arrows on the images, which provide a lay user with an understanding about morphological characters. Finally the cost of this field guide is quite reasonable for the amount of effort and quality of the information provided.

At present, this is one of the best field guides for the amphibians of the Western Ghats.

S. K. DUTTA

*Centre for Ecological Sciences,
New Biological Sciences Building,
Indian Institute of Science,
Bangalore 560 012, India
e-mail: sk_dutta@yahoo.com*

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